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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,406	06/26/2003	Mohamad Shaheen	42P16009	8443

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EXAMINER

LOKE, STEVEN HO YIN

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 02/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/608,406

Applicant(s)

SHAHEEN ET AL.

Examiner

Steven Loke

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-6 and 8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 4-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bryan.

In regards to claim 1, Bryan discloses an integrated circuit (col. 1, lines 8-19). It comprising: a semiconductor substrate [31]; a device layer [19] coupled to the substrate, the device layer having been coupled to the substrate via a transfer process comprising: doping the device layer with a first quantity of a first ionic material [22] (helium) and a second quantity of a second ionic material [17] (hydrogen), wherein the first ionic material comprises helium ions to react with the device layer at a predetermined energy level; annealing (heating) (col. 5, lines 29-37) the device layer and semiconductor substrate at a first annealing temperature.

Bryan differs from the claimed invention by not showing the energy level is approximately 50 KeV.

It would have been obvious for the energy level is approximately 50 KeV because it depends on the thickness of the device layer.

It would have been obvious to one having ordinary skill in the art at the time the invention was made for the energy level is approximately 50 KeV, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d272, 205 USPQ 215 (CCPA 1980).

In regards to claim 1, the process limitation of how the device layer is formed has no patentable weight in claim drawn to structure. Note that a product by process claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and In re Marosi et al, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a product by process claim, and not the patentability of the process, and that an old or obvious product by a new method is not patentable as a product, whether claimed in product by process claims or not. Note that applicant has the burden of proof in such cases, as the above caselaw makes clear.

Therefore, the phrase "epitaxial layer", the phrase "a transfer process", and the phrase "annealing the epitaxial layer and semiconductor substrate at a first annealing temperature" are thus non-limiting.

In regards to claim 2, Bryan differs from the claimed invention by not showing the sum of the first quantity of the first ionic material and the second quantity of the second ionic material is no greater than approximately $2 \times 10^{16} \text{ cm}^{-2}$.

It would have been obvious for the sum of the first quantity of the first ionic material and the second quantity of the second ionic material is no greater than approximately $2 \times 10^{16} \text{ cm}^{-2}$ because it depends on the way to separate the donor layer and the device layer.

It would have been obvious to one having ordinary skill in the art at the time the invention was made for the sum of the first quantity of the first ionic material and the second quantity of the second ionic material is no greater than approximately $2 \times 10^{16} \text{ cm}^{-2}$, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d272, 205 USPQ 215 (CCPA 1980).

In regards to claim 6, Bryan discloses the second ionic material [17] react with the device layer [19] at a predetermined energy level.

Bryan differs from the claimed invention by not showing the energy level is approximately 40 KeV.

It would have been obvious for the energy level is approximately 40 KeV because it depends on the thickness of the device layer.

It would have been obvious to one having ordinary skill in the art at the time the invention was made for the energy level is approximately 40 KeV, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d272, 205 USPQ 215 (CCPA 1980).

In regards to claim 8, Bryan differs from the claimed invention by not showing the first quantity of helium ions is approximately $1 \times 10^{16} \text{ cm}^{-2}$ and the second quantity of hydrogen ions is approximately $1 \times 10^{16} \text{ cm}^{-2}$.

It would have been obvious for the first quantity of helium ions is approximately $1 \times 10^{16} \text{ cm}^{-2}$ and the second quantity of hydrogen ions is approximately $1 \times 10^{16} \text{ cm}^{-2}$ because it depends on the way to separate the donor layer and the device layer.

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In regards to claim 4, Bryan differs from the claimed invention by not showing the first annealing temperature is between approximately 419 degrees C and approximately 430 degrees C.

It would have been obvious for the first annealing temperature is between approximately 419 degrees C and approximately 430 degrees C because it depends on the amount of first and second ionic materials in the device layer.

In regards to claim 5, Bryan further discloses the process further comprises mechanically separating a donor wafer [10], comprising the device layer [19], from a handle wafer [31], comprising the semiconductor substrate [31] (col. 5, lines 38 to 66).

In regards to claim 5, the process limitation of how to separate the donor wafer and the handle wafer has no patentable weight in claim drawn to structure. Note that a product by process claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and In re Marosi et al, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a product by process claim, and not the patentability of the process, and that an old or obvious product by a new method is not patentable as a product, whether claimed in product by process claims or not. Note that applicant has the burden of proof in such cases, as the above caselaw makes clear.

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Therefore, the phrase "mechanically separating a donor wafer, comprising the device layer, from a handle wafer, comprising the semiconductor substrate" is thus non-limiting.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Loke whose telephone number is (571) 272-1657. The examiner can normally be reached on 8:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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February 18, 2006

Steven Loke
Primary Examiner
